

SURVEY REPORT

OKLAHOMA DEPARTMENT OF WILDLIFE CONSERVATION



FISH MANAGEMENT SURVEY AND RECOMMENDATIONS

FOR

Wister LAKE

2025

SURVEY REPORT

State: Oklahoma

Project Title: Wister Lake Fish Management Survey Report

Period Covered: 2025

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Date Prepared: January 2026

ABSTRACT

In November of 2025 a mark recapture project was conducted on Wister Lake. This project saw Black and White Crappie marked and record as simply “Crappie” for ease of analysis and data recording. Early results show an estimated 180,000 to 200,000 crappie greater than 100 mm in Wister Lake. Catch data also reveals that while there are lower numbers of quality and preferred size fish compared to 2017, the crappie population is still health and posed for fantastic fishing in 2028 and 2029 owing to historic water levels and spawning in 2025.

INTRODUCTION

Wister Lake is located approximately 2 miles south of the town of Wister in LeFlore County, southeast Oklahoma. The lake is operated by the U. S. Army Corps of Engineers (USACE), Tulsa District. Congress authorized the project with the Flood Control Act of 28 June 1938 for flood control, water supply, low flow augmentation, water conservation, and sedimentation. Construction was completed in May 1949, which impounded the Poteau River and the Fourche Maline Creek. The conservation pool was filled to 471.6 ft. asl (4,000 surface acres) by December 1949. Beginning in 1974, an experimental six foot seasonal (June to December) rise in the normal conservation pool was initiated which impounded an additional 3,300 acres. A water level manipulation plan was passed by Congress on 30 July 1983, which resulted in a permanent 3 ft. rise in the normal conservation pool to 474.6 ft. msl and an additional 3 ft. from June through December to 477.6 ft. msl. In 2002, the normal conservation pool elevation was changed to 478.0 ft. msl year-round. The reservoir contains 47,414 acre feet of water at normal elevation with 6,077 surface acres (2001, OWRB Bathymetric Survey). Elevation at the top of the flood control pool is 502.5 ft. msl with the capacity to store 62,360 acre feet of water with 7,333 surface acres (2007, OWRB Water Atlas). The watershed consists of 993 square miles within Scott County, Arkansas and LeFlore County, Oklahoma. Wister Lake is oriented west to east, with inflow from the south and west sides of the lake. The dam is located on the far eastern side and the tailrace directs flow to the north where the Poteau River converges with the Arkansas River. The lake is shallow with an average depth of 7.4 ft. and a maximum depth of 39 ft. (2001, OWRB Bathymetric Survey). The Oklahoma Water Resources Board (OWRB) listed Wister Lake as impaired by pH, turbidity, chlorophyll-a, color, low dissolved oxygen (DO), and phosphorus in their 2008 Integrated Report. A number of land-use practices within the watershed cause excessive nutrient loading in effect fertilizing algae. An over abundance of algae will restrict light penetration that drives photosynthesis, a process that replenishes DO concentrations in the surface layer (epilimnion). Anoxic water stresses aquatic organisms and causes taste and odor issues in the water supply. The Poteau Valley Improvement Authority (PVIA) supplies water to over 40,000 people in surrounding communities. The PVIA has implemented the use of bubble plume diffusers and floating mats

of aquatic vegetation in effort to improve water quality at the water intake structures located north of Quarry Island. The lake and surrounding landscape attracts outdoor enthusiasts of all types. Lake Wister State Park has 3,428 acres with facilities including cabins, tent sites, and RV sites at 5 different locations. Other facilities include comfort stations with showers, picnic tables, group shelters, boat ramps, playgrounds, nature center, miniature golf course, and swimming beach. A handicap accessible fishing area is available at Wister State Park – Quarry Island. The Wister wildlife management area (35,500 acres) and the Coal Creek (130 acres) and Fourche Maline (270 acres) waterfowl development units offer many hunting opportunities to the public. Primitive camping is allowed throughout the management area and two concrete boat ramps are available in the Poteau River portion.

RESULTS

Crappie

In November 2025 ODWC fisheries staff conducted a mark recapture study at Wister lake to evaluate the feasibility of such a study on a larger reservoir and to estimate the number of crappie within Wister Lake. Over two weeks staff ran 301 trap net nights to estimate abundance by marking all fish greater than 100mm. staff took lengths of all fish caught but did not take weights except for a few crappie greater than 300mm. data was analyzed as “Crappie” instead of broken down by specific crappie species for easy of the study. Over 90% of the crappie in Wister lake are white crappie so it can be safely assumed that the results are indicative of the condition of White Crappie. 43 trap net nights were run the last day for final recapture and all fish were sacrificed for age and growth analysis. Data processing for the age and growth data is ongoing. Crappie catch rates are the highest in recent history (table 1). This is driven by the abundance of young of year crappie (table 2, Figure 1). While most crappie trap netting samples have ample young of year fish, this year is extra noticeable (figure 1), owing to both very high sampling effort and the record amount of rain in spring resulting in sustained high water during the crappie spawn. Crappie fishing in 2028 and 2029 should be some of the best effort assuming average conditions between now and those years. There is some potential for slower growth given the sheer abundance of crappie from this year’s spawn. Numbers of Quality and preferred size fish is down but according to anglers fishing has still been good. High sampling effort also allowed us to better sample memorable and some trophy sized individuals not readily captured in normal samples. Early analysis of the mark recapture project reveals an estimated 180,000 to 200,000 crappie greater than 100mm. This number will change as further analysis and data verification continues. Further analysis on age and growth data will be conducted once otoliths are aged.

Table 1: Crappie Catch Per Unit Effort (CPUE) by year.

Total CPUE	2009	2017	2023	2025
Mean	9.13	26.7	17.41	28.71
Count	18	30	30	301
SE	1.82	3.53	3.43	2.55
L 95% CI	5.56	19.77	10.69	23.71
U 95% CI	12.69	33.63	24.13	33.71

Table 2: Crappie CPUE by size class across time.

CPUE Size	2009		2017		2023		2025	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE
Substock	2.06	1.04	0.4	0.16	4.53	2.23	14.96	2.15
Stock	2.8	0.63	10.06	1.78	3.12	0.68	6.2	0.51
Quality	2.41	0.55	10.67	1.41	4.67	1.02	2.8	0.19
Preferred	1.29	0.28	4.4	0.8	4.63	0.9	2.92	0.22
Memorable	0.45	0.15	0.63	0.31	0.47	0.17	1.72	0.18
Trophy	0.11	0.08	.	.	.	.	0.01	0

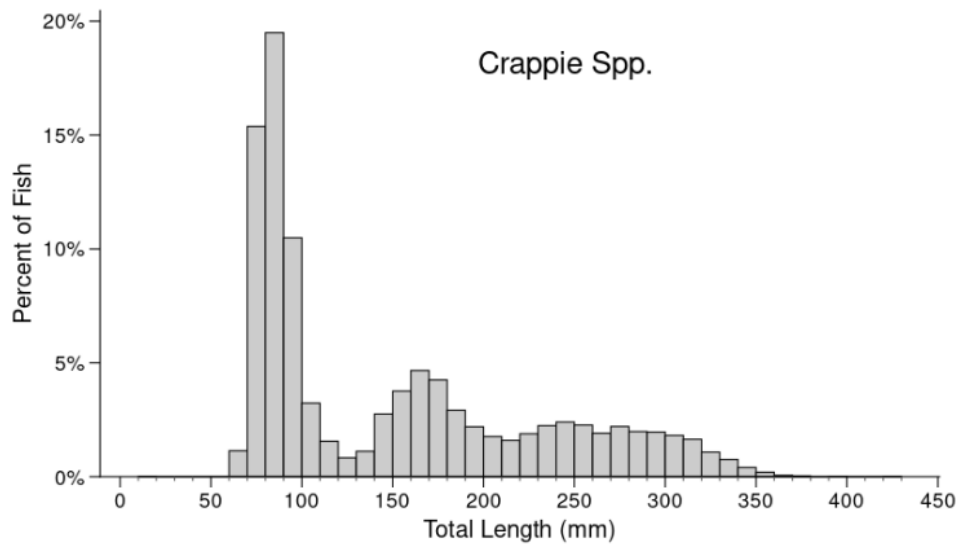


Figure 1: Crappie length frequency histogram.